

SECTION 07531

ELASTOMERIC MEMBRANE ROOFING (HYPALON)

LANL MASTER CONSTRUCTION SPECIFICATION

When editing to suit project, author shall add job-specific requirements and delete only those portions that in no way apply to the activity (e.g., a component that does not apply). To seek a variance from applicable requirements, contact the ESM Architectural POC.

When assembling a specification package, include applicable specifications from all divisions, especially Division 1, General Requirements.

Delete information within "stars" during editing.

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Adhered membrane roofing system.

1.2 RELATED SECTIONS

- B. COMPLY WITH SECTION [07300](#), ROOFING GENERAL PROVISIONS.

PART 2 PRODUCTS

2.1 PRODUCT OPTIONS AND SUBSTITUTION

- A. Alternate products may be accepted; follow SECTION [01630](#), PRODUCT OPTIONS AND SUBSTITUTIONS.

2.2 ACCEPTABLE MANUFACTURERS OF MEMBRANE MATERIAL

- A. Tremco, Inc. Fully adhered Chlorosulfonated Polyethylene (CSPE) Membrane.
- A. Burkline Industries.

2.3 MEMBRANE AND ASSOCIATED MATERIALS

- A. Provide "Hypalon" synthetic rubber as produced by E.I. DuPont de Nemours & Company, formed into uniform flexible sheets, complying with the following:

Also defined as “CSPE”, comprised of a polyester scrim reinforced chlorosulfonated polyethylene (CSPE) sheet, conforming to the following minimum physical properties.

<u>Property</u>	<u>ASTM Test Method</u>	<u>Specification</u>
Color		Low emissivity, light color (e.g., white)
Weight	D751	0.29 lb/ft ²
Nominal Thickness (min.)	D751	0.045 inch
Tolerance Thickness (min.)	D751	± 10 %
Breaking Strength (min.)	D751 (Grab Method)	225 lbf
Elongation (min.)	D751	25 %
Tear Resistance (min.)	D751 (Tongue Method)	90 lbf (400 N)
Ozone Resistance (min.)	D1149	Pass
Low Temperature Flexibility	D2136	Pass
Heat Aging	D573	Maintains 100 % of Breaking Strength
Volatility, Max Loss	D1203, Method A	0.5 %
Hydrostatic Resistance	D751, Method A	300 psi (2.1 Mpa)
Shore A Hardness	D2240	80 ± 5
Puncture Resistance	FTM 101B, Method 2031	200 lbf (900 N)
Dimensional Stability (max.)	D1204	0.1 %
Emmaqva Concentrated Natural E838 Sunlight, 3 million Langleys		No visible surface cracking or stiffening

2.4 ADHESIVE MATERIALS

- A. Membrane Adhesives: As specified by membrane manufacturer.
- B. Thinner and Cleaner: As specified by adhesive manufacturer, compatible with sheet membrane.

2.5 BOARD INSULATION AND SEPARATION BOARD

- A. COMPLY WITH SECTION [07212](#), Board Insulation.
- B. As approved by membrane manufacturer.

2.6 FLASHING

- A. COMPLY WITH SECTION [07620](#), Sheet Metal Flashing and Trim.
- B. Flexible Flashings: Same material as membrane as supplied by manufacturer, thermally welded per manufacturers requirements.

- C. Flashing membrane furnished by roofing membrane manufacturer. Flashing membranes are generally same materials as roofing membrane unless otherwise specified in Contract documents.

2.7 ACCESSORIES

- A. Flashing Adhesive: As specified by membrane manufacturer. Limit adhesives containing carcinogens to vertical surfaces and flashings.
- B. Walktread Membrane: Membrane manufacturer's walktread material.
- C. Wood Nailers: Install treated wood nailers at perimeter of entire roof and around such other roof projections and penetrations as specified in Contract documents. Wood shall be #2 or better, treated fire retardant lumber. Creosote and asphaltic preservatives are prohibited. Height of nailers shall match insulation thickness or as indicated on drawings. Firmly anchor nailers at maximum spacing of 12 inches unless noted otherwise on drawings and capable of resisting a force of 300 pounds per lineal foot in any direction. Provide ½-inch expansion spaces between lengths of nailers.
- D. Sealers: As recommended by membrane manufacturer and in compliance with Section [07900](#), Joint Sealers.
- E. Miscellaneous Fasteners and Anchors: In general, all fasteners, anchors, nails and straps shall be of zinc-coated steel, galvanized, or stainless steel and cadmium-free. All fasteners and anchors shall have minimum embedment of 1-1/2 inch and shall be approved for such use by fastener manufacturer and membrane manufacturer.
- F. Sheet Metal Accessory Materials: ASTM A653, 0.20 percent copper, G90 hot-dipped galvanized, 24 gage or heavier.
- G. Expansion Joint Covers: As specified or as required by membrane manufacturer.
- H. Perimeter Edge Metal: As authorized by membrane manufacturer with minimum 24 gage metal meeting criteria of Section [07620](#), Sheet Metal Flashing and Trim. Coating to be same material as roofing membrane and compatible with roofing membrane for hot air welding.
- I. Slip-Sheet: Provide only when needed between incompatible materials. Use membrane manufacturers standard slip-sheet material.
- J. Base Sheet: Provide membrane manufacturers recommended vented base sheet on concrete decks when specified in Contract documents or when recommended by membrane manufacturer.
- K. Vapor Barrier: Provide membrane manufacturers recommended Kraft paper vapor barrier between metal decks and insulation when specified in Contract documents or when recommended by membrane manufacturer.

PART 3 EXECUTION

3.1 INSTALLATION OF BOARD INSULATION AND SEPARATION BOARD

- A. COMPLY WITH SECTION [07212](#), BOARD INSULATION.

3.2 INSTALLATION OF HEAT WELDED SYSTEMS

- A. For heat welded systems, weld adjacent sheets in accordance with manufacturer's written instructions. Hot air-weld side and end lap joints. Lap area shall be minimum of 3 inches wide when machine welding, and minimum of 4 inches wide when hand welding. No adhesive shall be present within lap areas.
- B. Provide hand and machine welding per manufacturer's written instructions. Workers using welding equipment shall have successfully completed a course of instruction provided by a manufacturer's representative prior to welding. Use welding equipment approved by manufacturer.
- C. Check completed seams after cooling for continuity using a screwdriver or suitable blunt instrument. In addition, make on-site evaluation of welded seams at locations as directed by the LANL Construction Inspector or membrane manufacturer's representative. Provide 2-inch-wide cross-sectional samples taken through completed seams. Take approximately 2 samples per 100 roofing squares. When tested correctly, welded seams display failure from shearing of the membrane prior to separation of weld. Patch each test cut at no additional charge.
- D. Hot air-weld exposed or cured membrane per manufacturer's instructions.
- E. Keep roof area clear of loose or spilled fasteners and metal scraps to guard against accidental roof puncture.

3.3 INSTALLATION OF MEMBRANE FLASHING

- A. Install flashing concurrently with roof membrane as job progresses. Do not use temporary membrane flashing without prior written approval of the LANL Construction Inspector. Approval shall only be for specific locations on specific dates.
- A. Fully adhere flashing membranes to substrates. Cut and hot air weld interior and exterior corners and miters in place for heat welded systems, or use prefabricated corners and miters.
- B. Bituminous elements shall not be in contact with non-compatible membrane flashing. Use manufacturer's recommended isolator to isolate non-compatible membrane flashing from bituminous-coated elements such as vent stacks and pipes penetrating the roof.

- C. Flashing for hot welded systems shall be hot-air welded at their joints and at their connections with roof membrane.
- D. Flash pipe penetrations minimum 8 inches above roofing membrane, and terminate with stainless steel hose clamp with sealant applied along top edge. Pipe shall be isolated with membrane flashing. Factory fabricated pipe seals and roof membrane shall be specified by membrane manufacturer. Install a buffer layer of membrane between hose clamp and flashing sheet to avoid damage.
- E. Mechanically fasten curb flashing membranes along top using nails with 1 inch diameter heads spaced maximum 6 inches on center, or use predrilled metal strips. Caulk predrilled metal strips along top edge with sealant. Use expansion pins with nylon sheaths set in predrilled holes to secure flashing to masonry and concrete surfaces. Use reglets on walls as shown in Contract documents.
- F. Provide edge metal approved by membrane manufacturer.

END OF SECTION

Do not delete the following reference information:

FOR LANL USE ONLY

This project specification is based on LANL Master Construction Specification Rev 3, dated May 17, 2004.